



CERTIFICATE OF MAILING  
37 C.F.R. 1.8

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231, on the date below:

27 Sept 2001  
Date

Richard C. Auchterlonie  
Signature Reg. 30,607

RECEIVED  
OCT 05 2001  
Technology Center 2600

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Peter Bixby, John Forecast,  
William O. Hultin, Sorin Faibish,  
Wayne W. Duso

Group Art Unit: 2614

Examiner: Unknown

Serial No.: 09/834,427  
Confim. No. 5914

Atty. Dkt. No.: 10830.0071.NPUS00

Filed: April 13, 2001

For: MPEG DUAL-CHANNEL DECODER  
DATA AND CONTROL PROTOCOLS  
FOR REAL-TIME VIDEO STREAMING

**SUBMISSION OF FORMAL DRAWINGS**

**ATTN OFFICIAL DRAFTSMAN**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Applicants hereby submit the formal drawings (21 sheets) for the above-referenced application and request that these drawings be accepted for filing.

Respectfully submitted,

Richard C. Auchterlonie

Richard C. Auchterlonie  
Reg. No. 30,607

HOWREY SIMON ARNOLD & WHITE, LLP  
P. O. Box 4433  
Houston, Texas 77210-4433  
(713) 787-1400



2613 #3. 10-18-01

Please type a plus sign (+) inside this box → ☐

PTO/SB/21 (08-00)  
Approved for use through 10/31/2002. OMB 0851-0031  
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>TRANSMITTAL FORM</b> <i>(to be used for all correspondence after initial filing)</i>	Application Number	09/834,427	
	Filing Date	April 13, 2001	
	First Named Inventor	Peter Bixby	
	Group Art Unit	2614	
	Examiner Name	Unknown	
Total Number of Pages in This Submission	23	Attorney Docket Number	10830.0071.NPUS00

RECEIVED

OCT 05 2001

Technology Center 2600

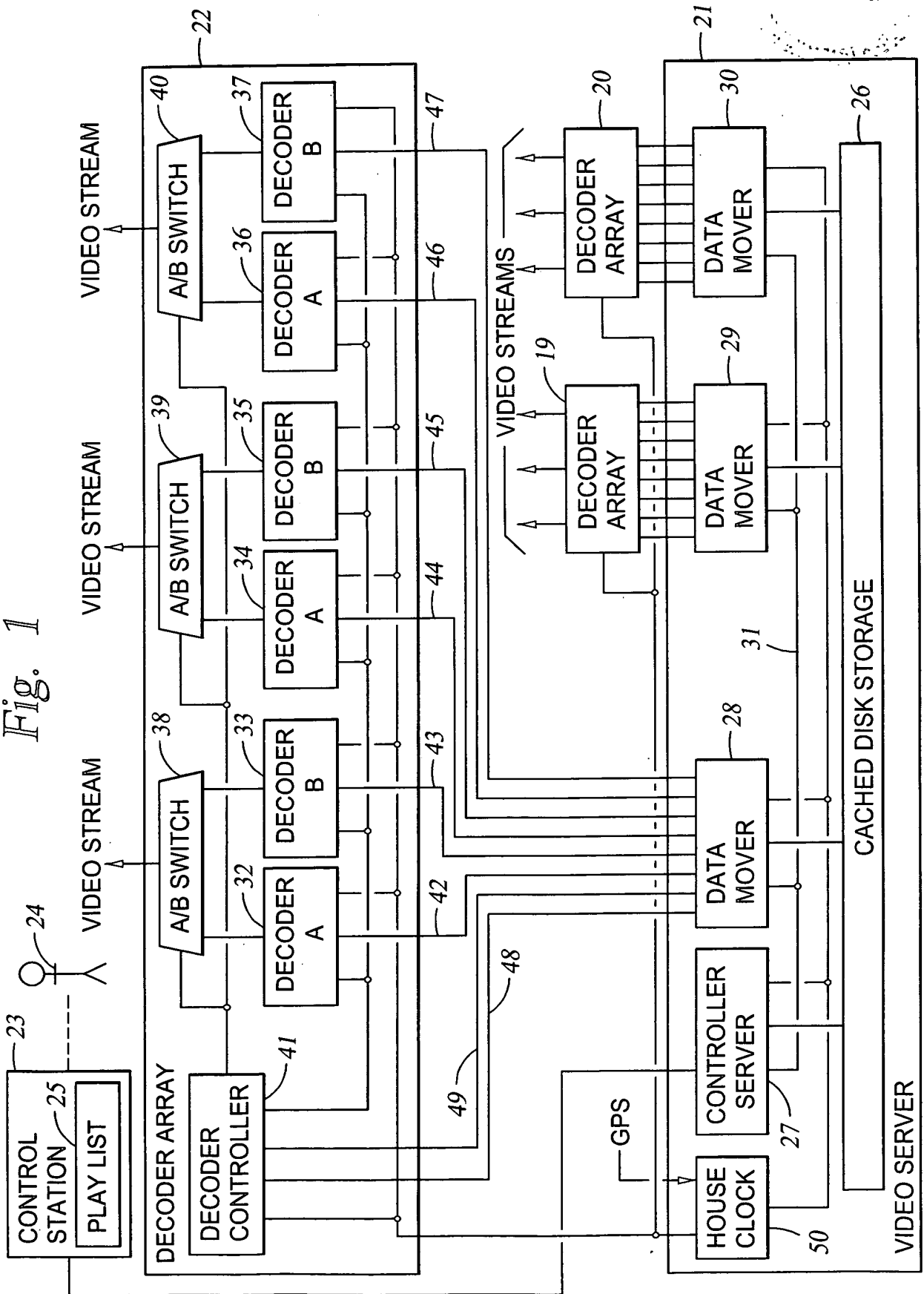
ENCLOSURES (check all that apply)		
<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Assignment Papers (for an Application)	<input type="checkbox"/> After Allowance Communication to Group
<input type="checkbox"/> Fee Attached	<input checked="" type="checkbox"/> Formal Drawings (21 sheets)	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment / Reply	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Terminal Disclaimer	-Submission of Formal Drawings
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	-Return Receipt Postcard
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> CD, Number of CD(s) _____	
<input type="checkbox"/> Response to Missing Parts/Incomplete Application	Remarks	
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		

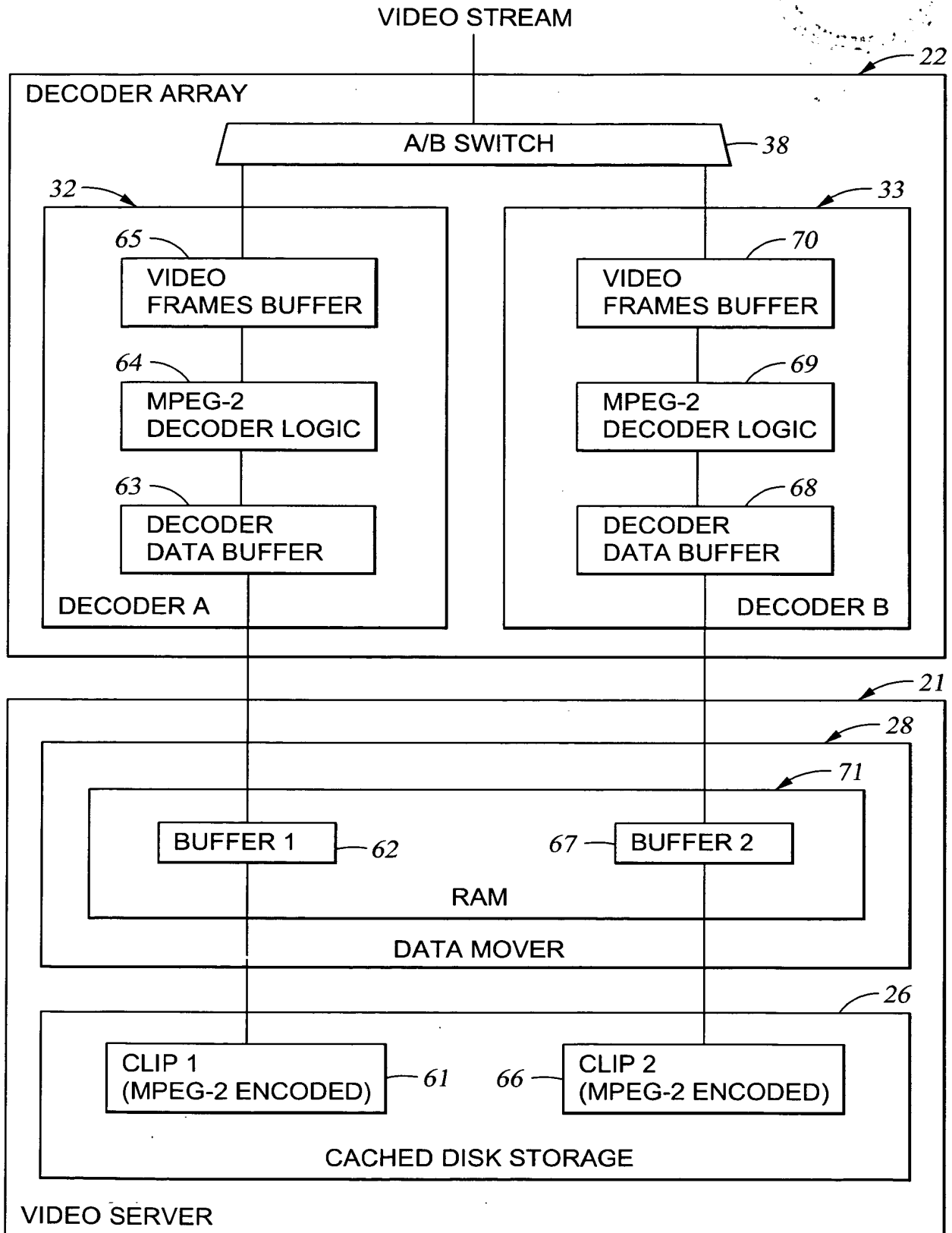
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or individual name	Richard C. Auchterlonie, Esq. Howrey Simon Arnold & White, LLP
Signature	<i>Richard C. Auchterlonie</i>
Date	27 Sept. 2001 Reg. 30,607

CERTIFICATE OF MAILING	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on this date: 27 Sept 01	
Typed or printed name	Richard C. Auchterlonie, Reg. No. 30,607
Signature	<i>Richard C. Auchterlonie</i> Date 27 Sept 01

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Fig. 1



*Fig. 2*

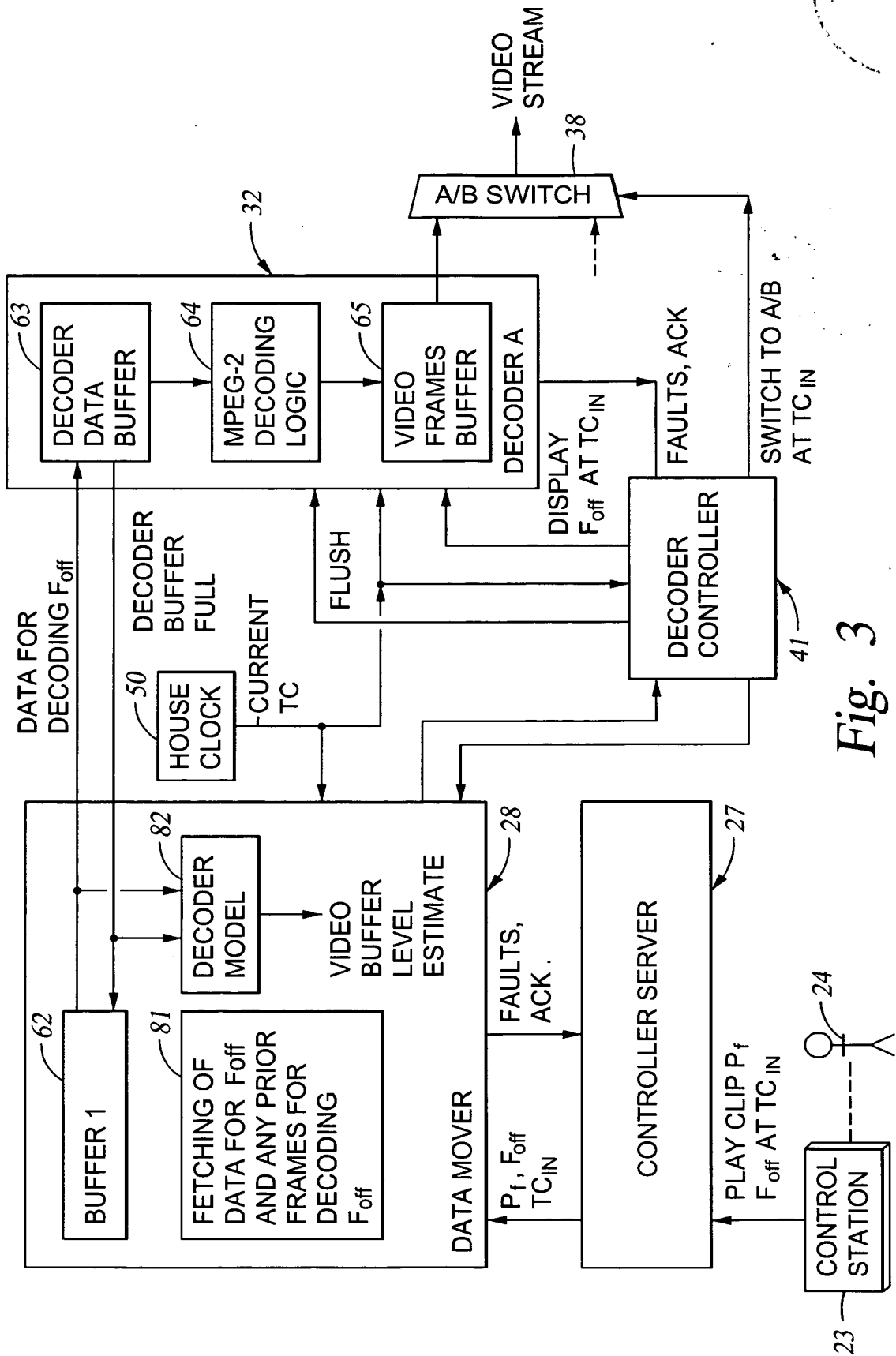


Fig. 3

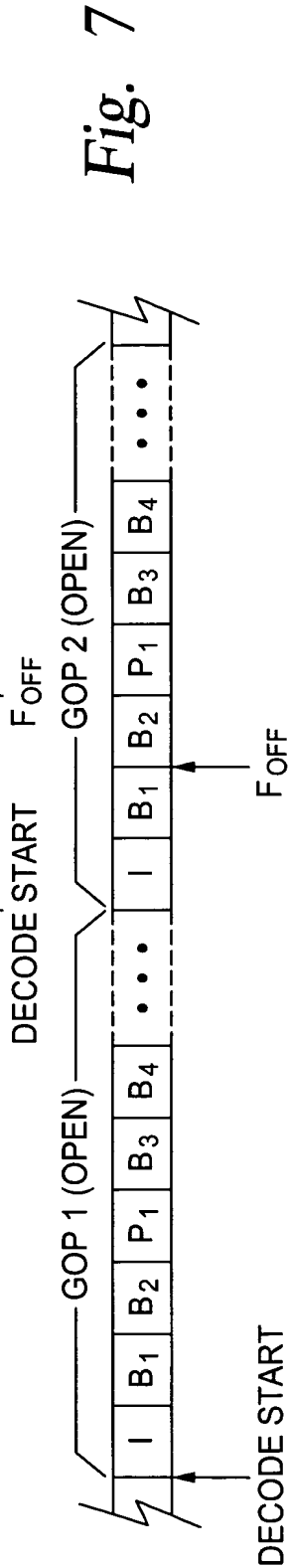
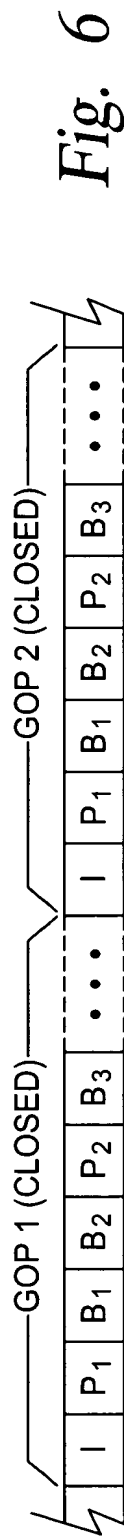
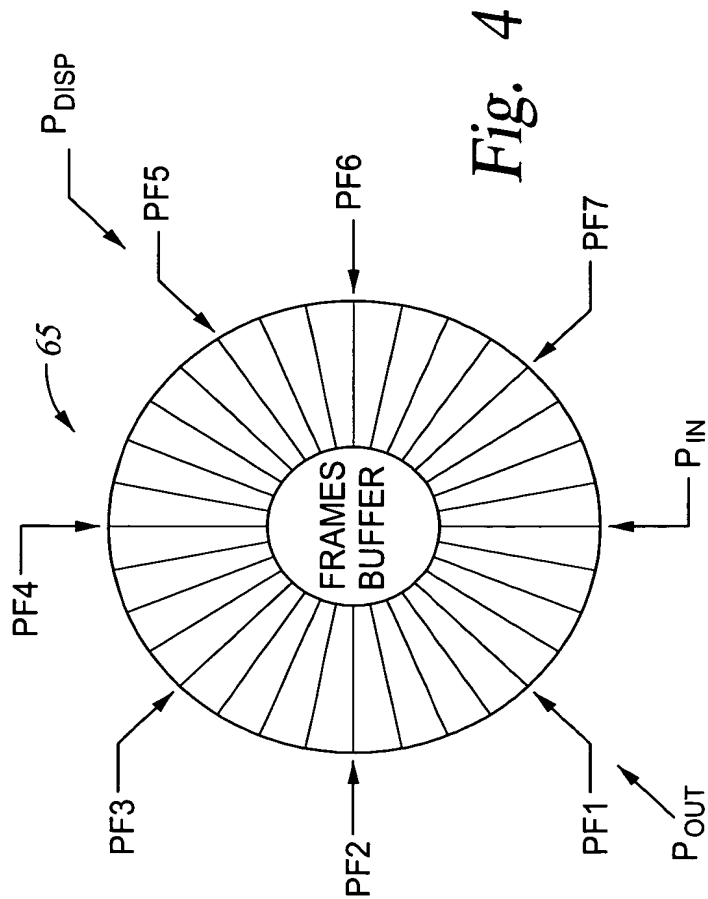
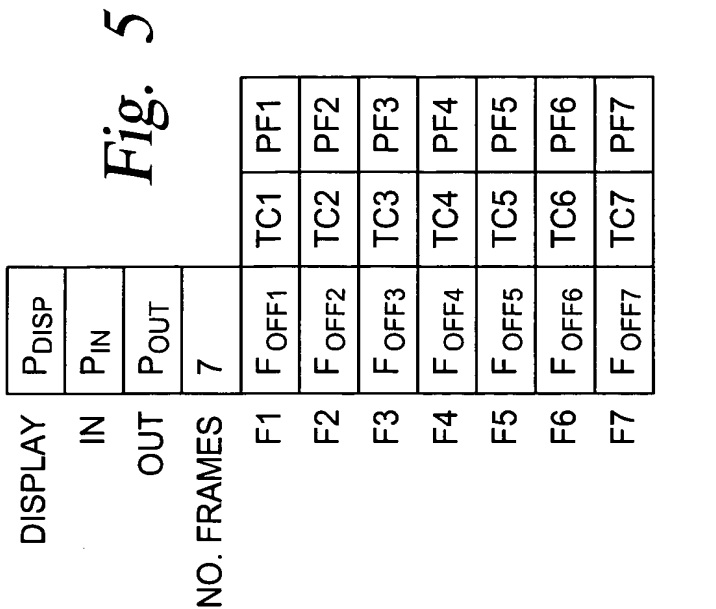
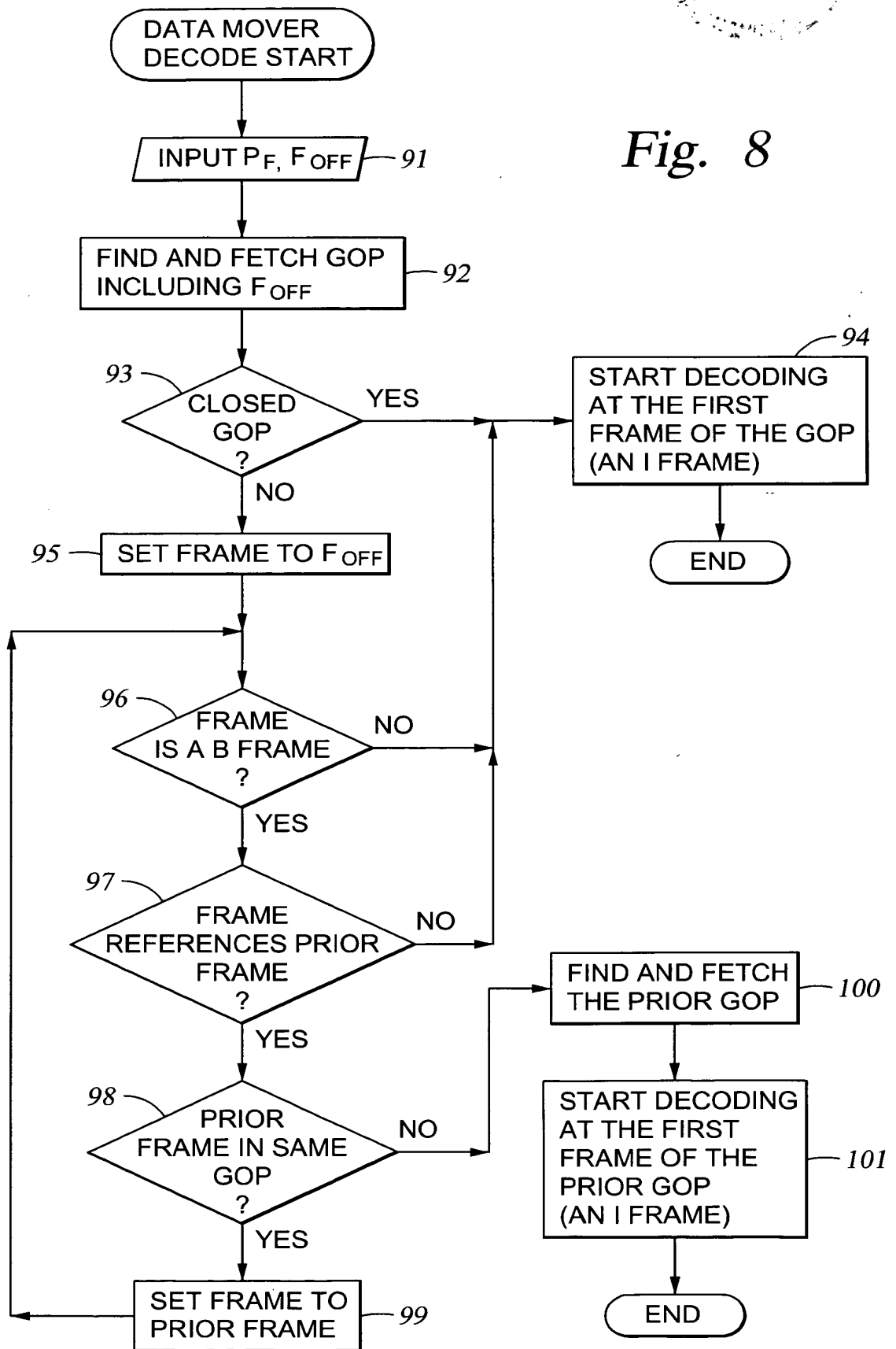
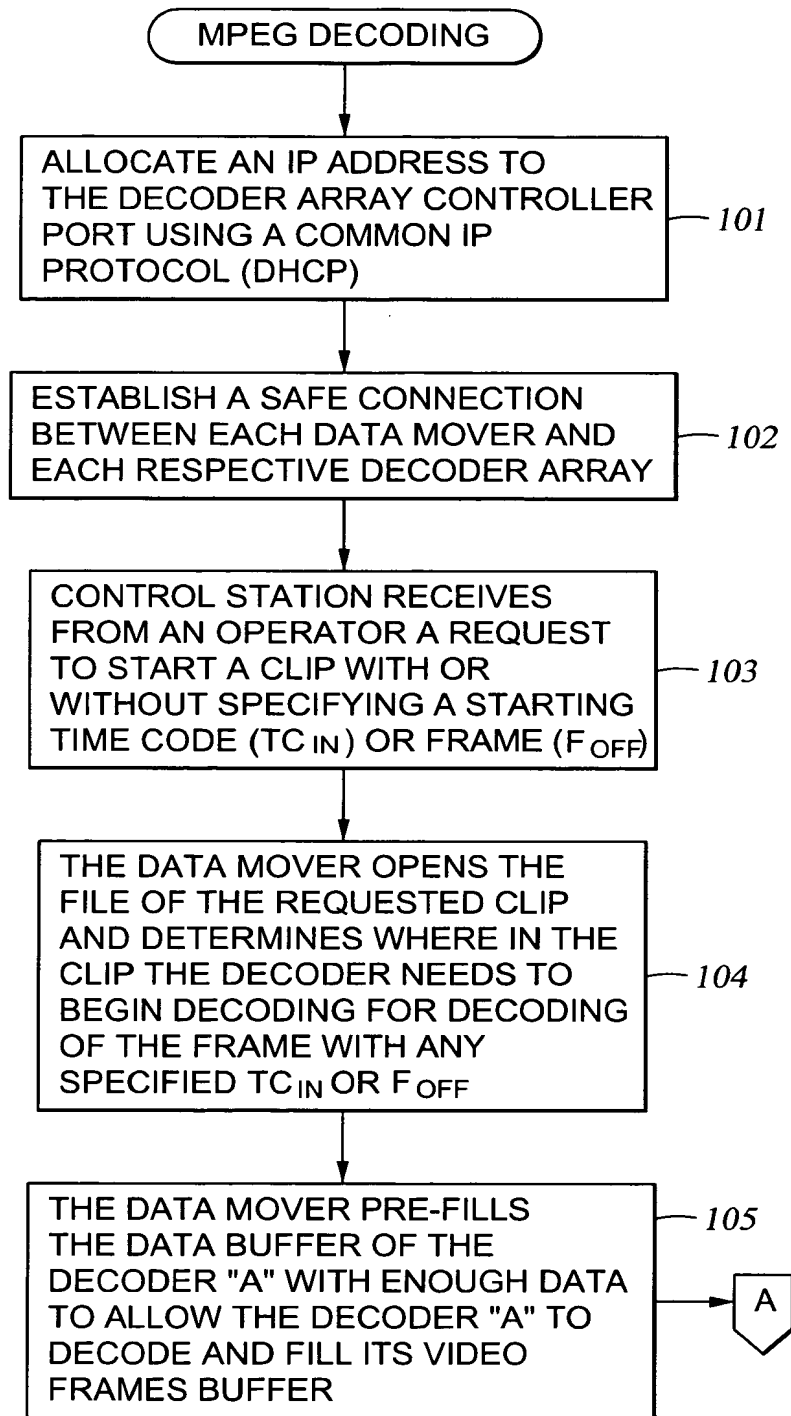


Fig. 8

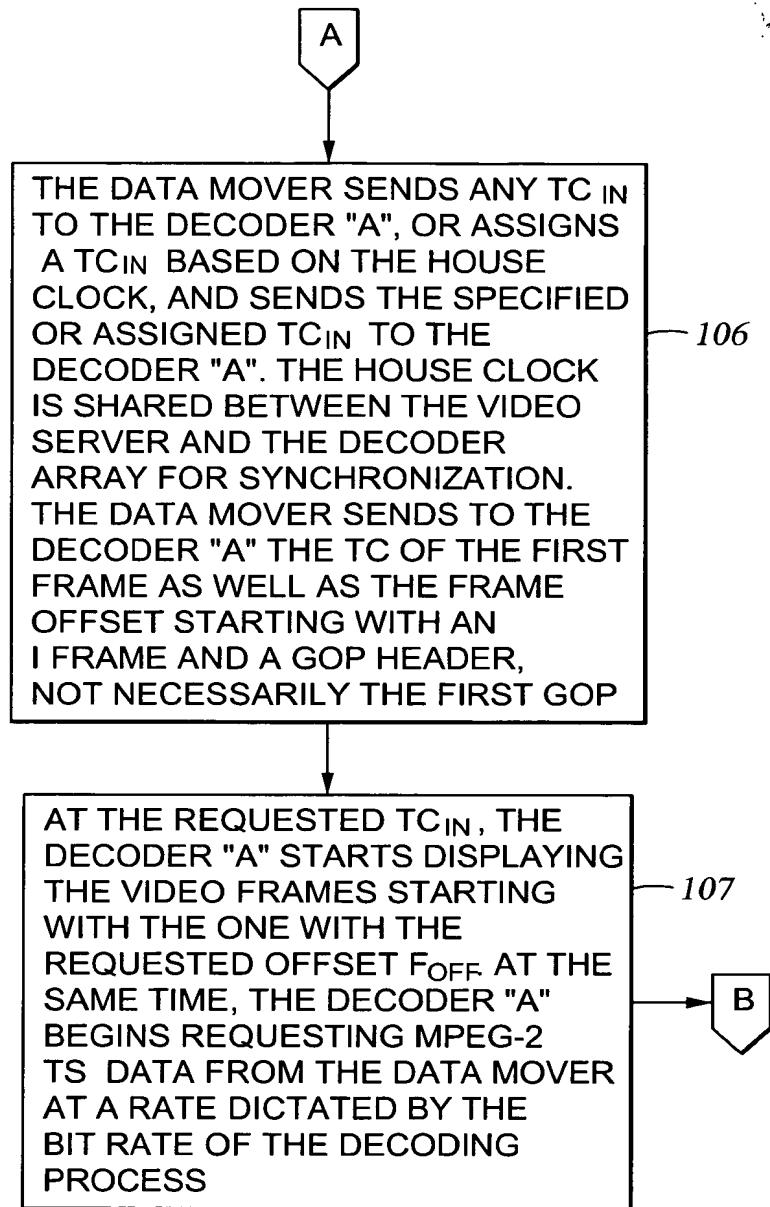


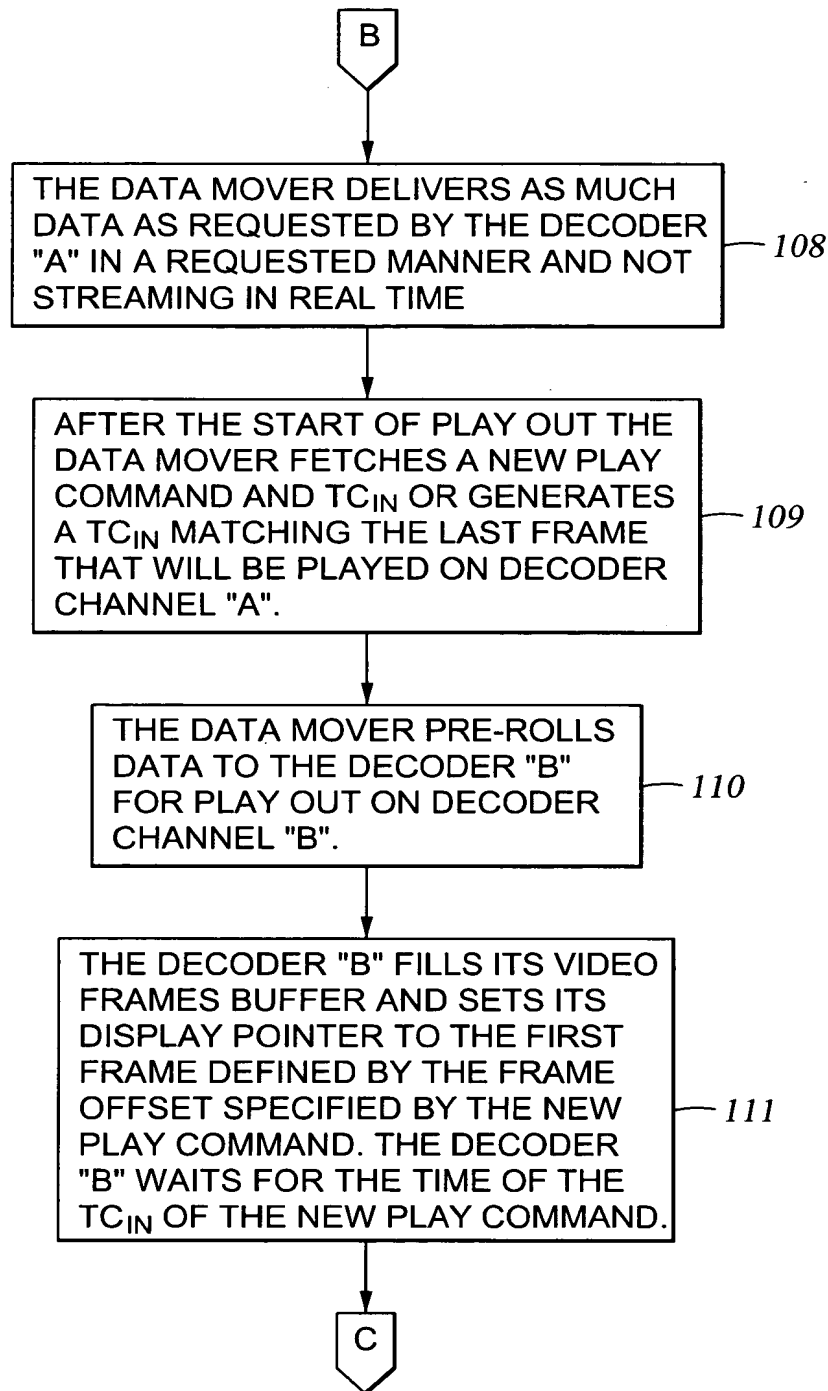
6/21

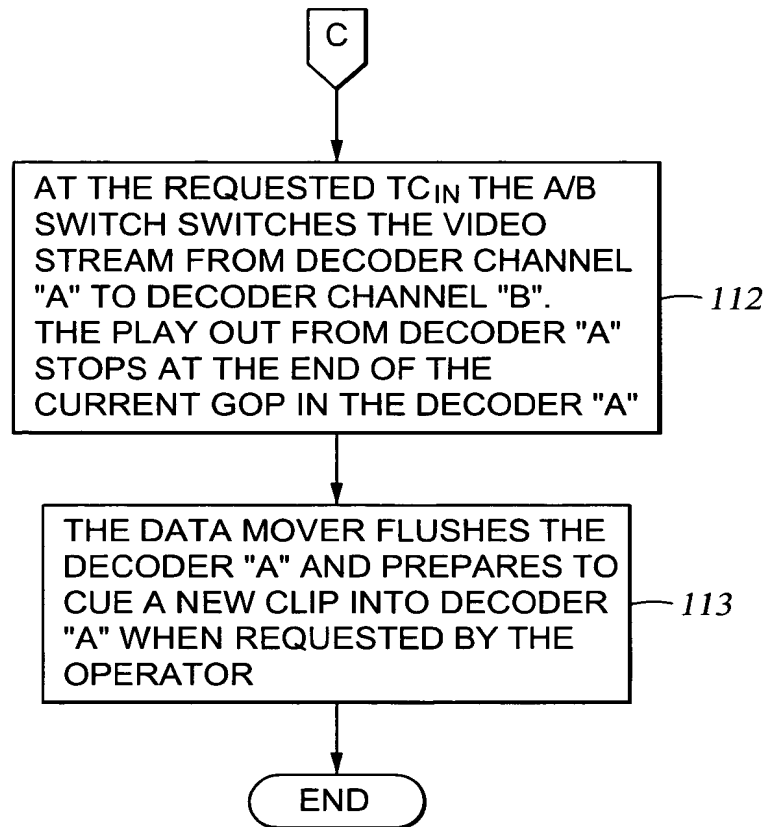


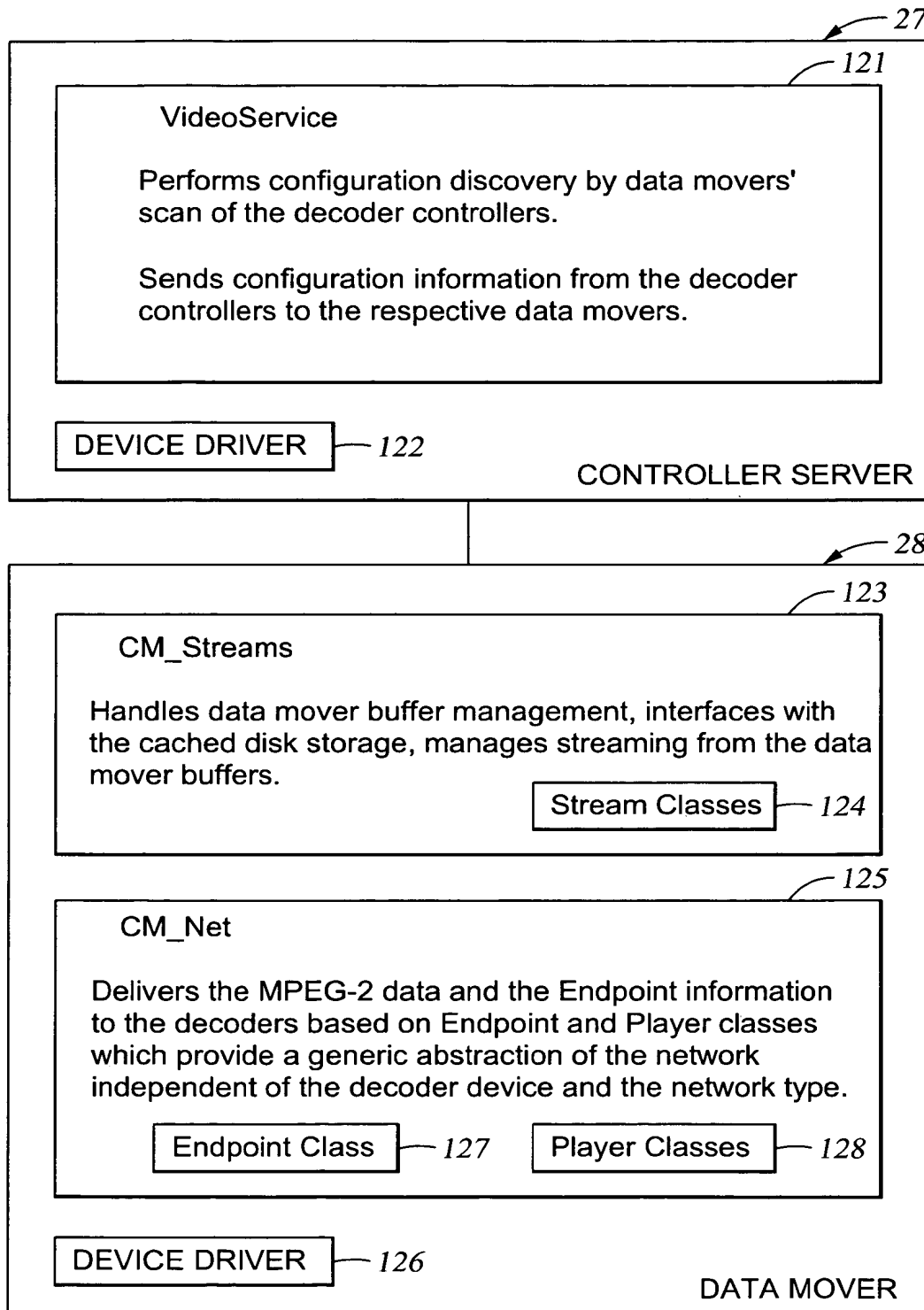
*Fig. 9*



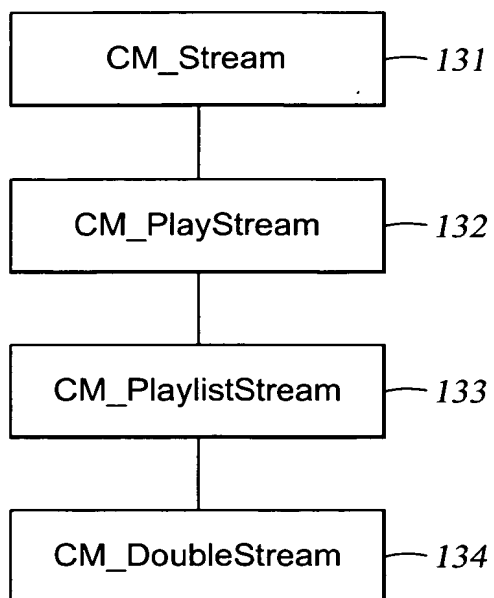
*Fig. 10*

*Fig. 11*

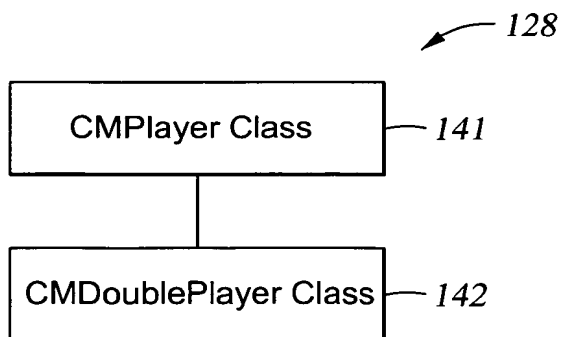
*Fig. 12*



*Fig. 13*



*Fig. 14*



*Fig. 15*

## Control Protocol

<p><u>Configuration.</u> Allows the data mover to determine the configuration of the decoder array and set up any configuration parameters. Commands: QueryStatus, Configure</p>
<p><u>Streaming.</u> Controls delivery of streams (i.e., timing, clips, transition type). Commands: PrerollClip, ModifyDisplayTime, CancelClipPreroll, PauseClip, ResumeClip, ModifyClip.</p>
<p><u>Asynchronous status reports.</u> Asynchronous reports of significant events from the decoder array to the data mover. Commands: ClipHasStarted, ClipHasEnded, ClipsEnding, TrapMessage, EditSummary.</p>
<p><u>Edit.</u> Allows all decoders in the decoder array to be controlled by an edit review station. Commands: Jog forward/backward, Shuttle forward/backward, Stop, Goto a specific timecode, and normal Play.</p>

Fig. 16



## Format of Streaming Protocol Ethernet Packet

Ethernet Header	(14 bytes)
IP Header	(20 bytes, min) (60 bytes, max)
UDP Header	(8 bytes)
Streaming Protocol Header	(32 bytes)
Optional Data	(6-26 bytes, min, depending on IP hdr) (1400-1440 bytes, max, depending on IP hdr)
Frame Checksum	(4 bytes)

*Fig. 17*

Request Message Header Format

Request message number		
Clip ID Number		
Sequence Number		
byte offset		
window size		
state	Reserved	speed
RESERVED		
RESERVED		

Fig. 18

Data Message Header Format

Data message number		
Clip ID Number		
Sequence Number		
offset		
0x00	0x00	data length
flags	RESERVED	
RESERVED		
RESERVED		

Fig. 19



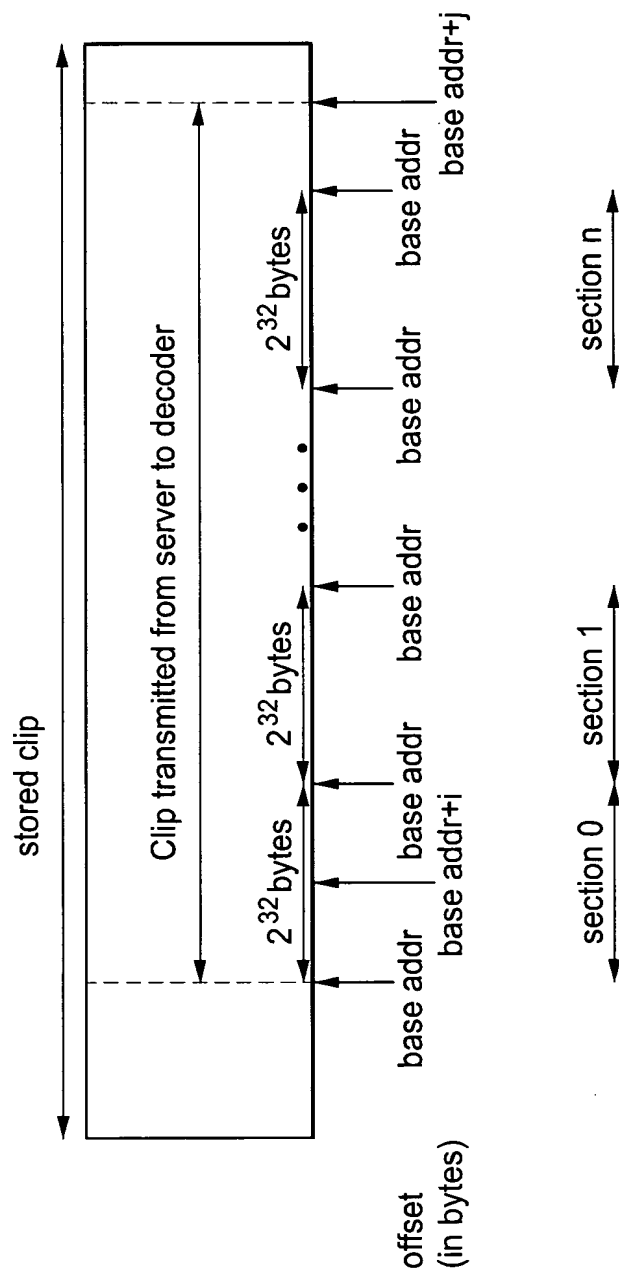
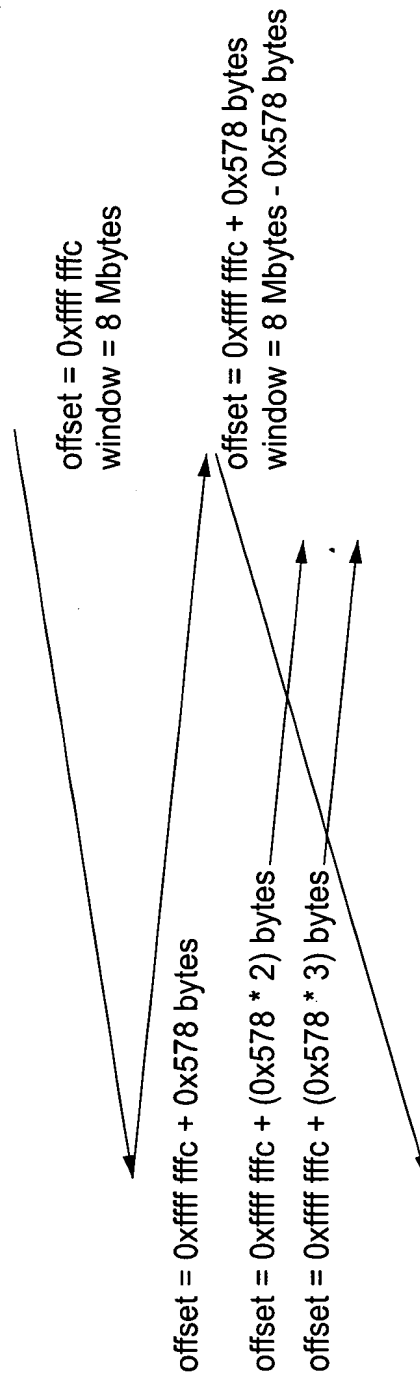


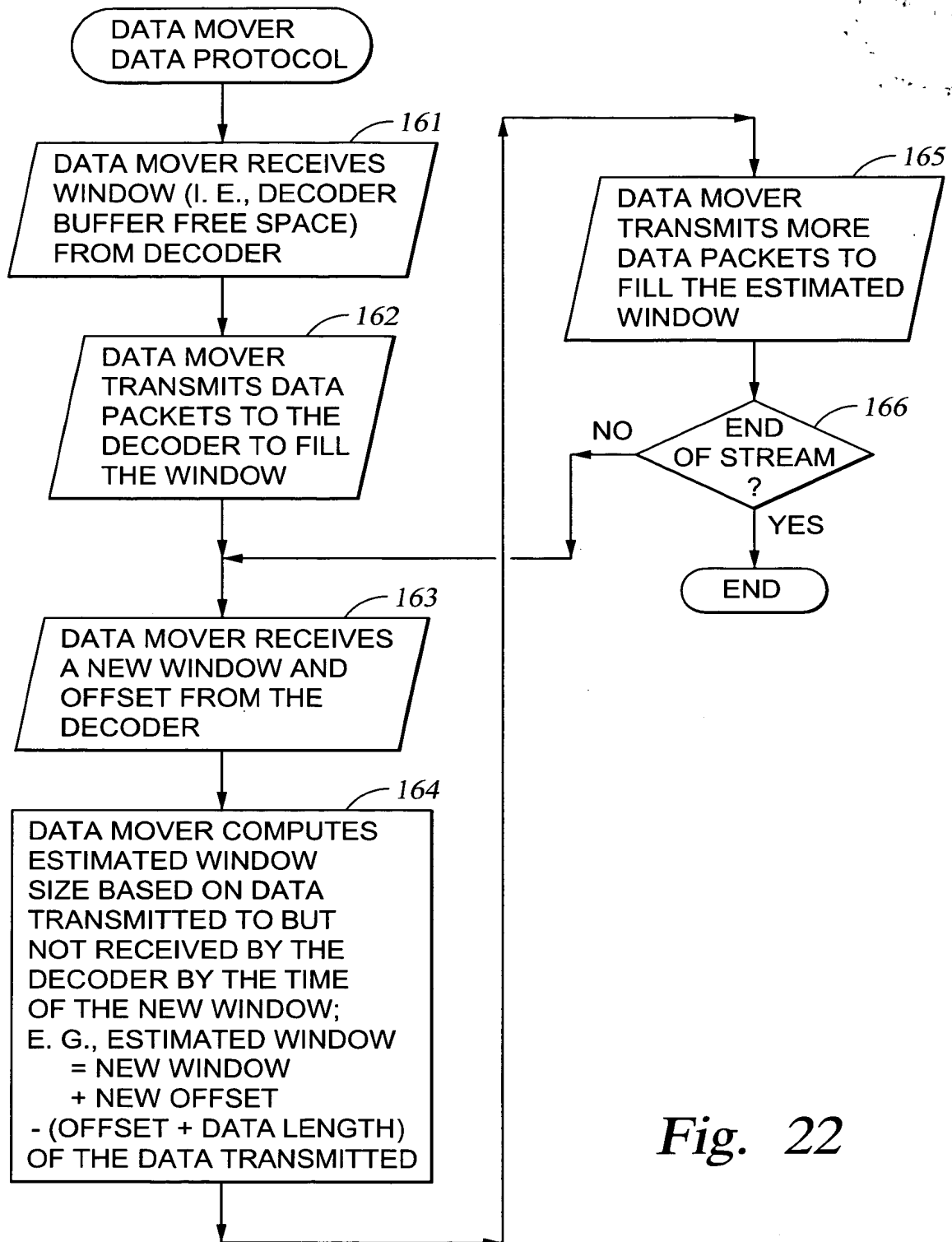
Fig. 20

# DATA MOVER SETS OFFSET IN DATA MESSAGE      DECODER SETS OFFSET IN RECEIVE MESSAGE



Data mover knows that real window size is not 8 Mbytes - 0x578 bytes since two more data messages are in transit with 0x578 bytes each. Data mover calculates true window size

Fig. 21

*Fig. 22*

# DATA MOVER SETS OFFSET IN DATA MESSAGE      DECODER SETS OFFSET IN RECEIVE MESSAGE

offset = 0x 0000 abcc

offset=  
(0x0000 abcc) data length = 0x578

received offset = 0x0000 abcc

offset=  
(0x0000 abcc + 0x578) data length = 0x578

lost Data message

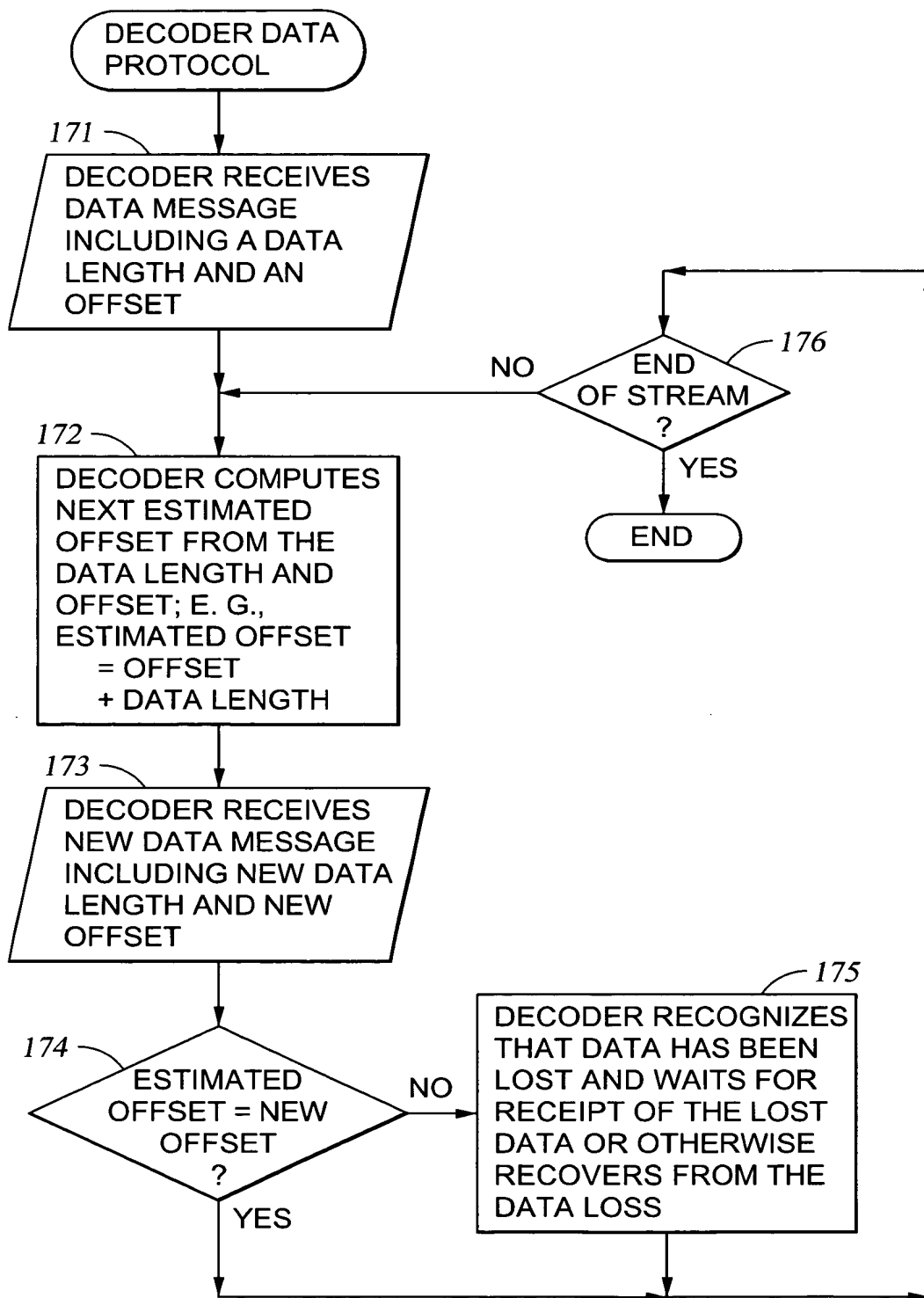
offset=  
(0x0000 abcc + 0x578 x 2) data length = 0x578

expected offset = 0x0000 abcc + 0x578

received offset = 0x0000 abcc + 0x578 x 2

decoder detects a difference between expected  
offset and received offset; the decoder realizes  
data has been lost

Fig. 23

*Fig. 24*

Definition of Streaming States

Streaming State	Definition
Cueing	Data mover sends data to the decoder, at least up to the time code that must be displayed. The data rate can be at a rate convenient for the data mover. The decoder consumes the data at 1 x real time. It is not important if the decoder underflows, since the underflow would be before the display time.
Streaming	The data mover sends data to the decoder at 1 x real time and the decoder consumes the data at 1 x real time; the decoder can underflow/overflow and it will affect the picture presented to the viewer.
Stopped	The decoder is not consuming data. During this state, the decoder continues to send Request messages at the configured Request interval.
non-overlapped	This state requires that the decoder send a new Request message only after receiving a response from the previous Request message. The data mover may use this mode for testing.

Fig. 25



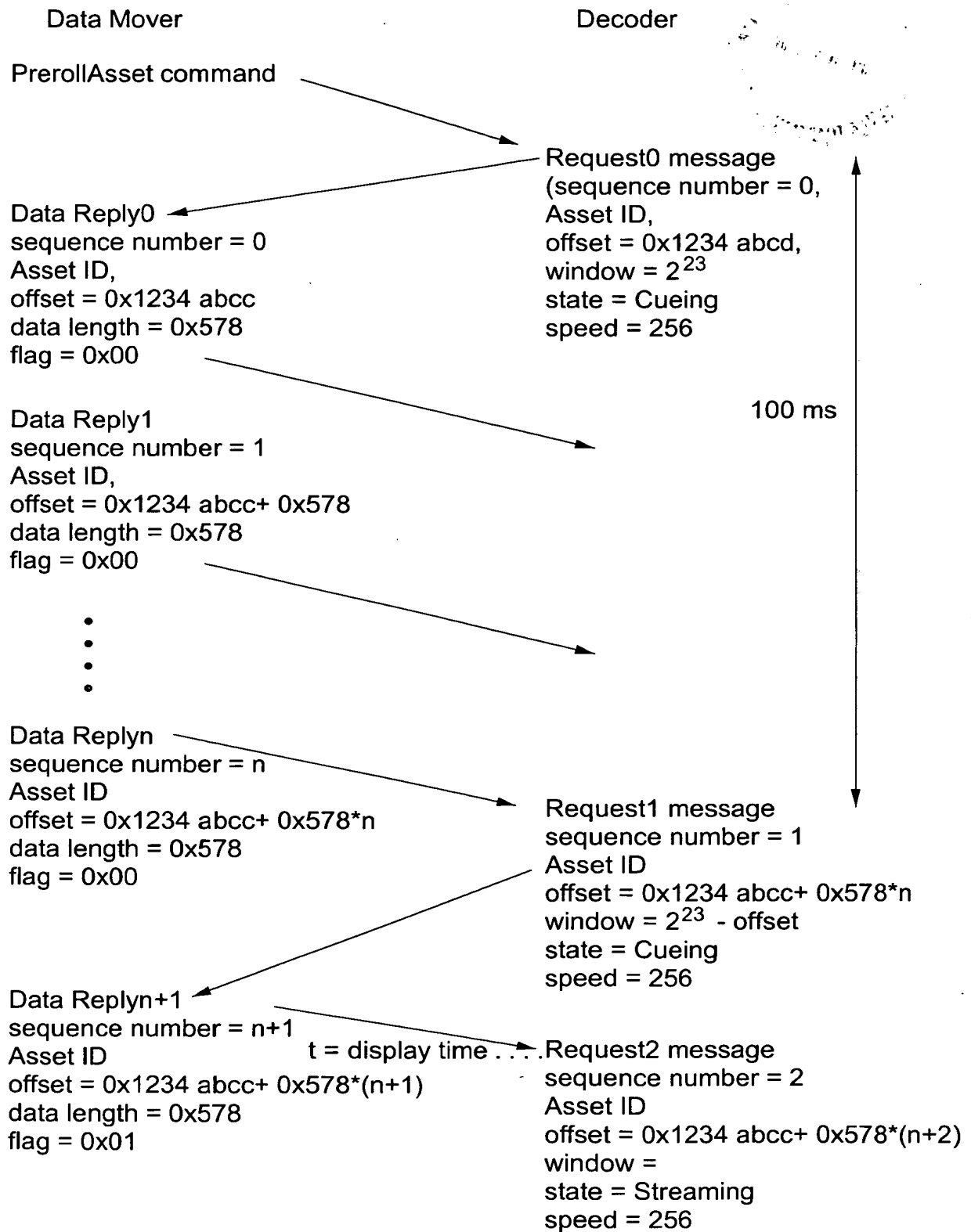


Fig. 26